

State the property that justifies each statement.

13. If  $5(x + 7) = -3$ , then  $5x + 35 = -3$ .
14. If  $m\angle 1 = 25$  and  $m\angle 2 = 25$ , then  $m\angle 1 = m\angle 2$ .
15. If  $AB = BC$  and  $BC = CD$ , then  $AB = CD$ .
16. If  $3\left(x - \frac{2}{3}\right) = 4$ , then  $3x - 2 = 4$ .

HW 2.3

**Example 2**

**CCSS ARGUMENTS** Complete each proof.

17. Given:  $\frac{8 - 3x}{4} = 32$

Prove:  $x = -40$

Proof:

Statements	Reasons
a. $\frac{8 - 3x}{4} = 32$	a. Given
b. $4\left(\frac{8 - 3x}{4}\right) = 4(32)$	b. ?
c. $8 - 3x = 128$	c. ?
d. ?	d. Subtraction Property
e. $x = -40$	e. ?

18. Given:  $\frac{1}{5}x + 3 = 2x - 24$

Prove:  $x = 15$

Proof:

Statements	Reasons
a. ?	a. Given
b. ?	b. Multiplication Property
c. $x + 15 = 10x - 120$	c. ?
d. ?	d. Subtraction Property
e. $135 = 9x$	e. ?
f. ?	f. Division Property
g. ?	g. Symmetric Property

**Example 3**

**PROOF** Write a two-column proof to verify each conjecture.

19. If  $-\frac{1}{3}n = 12$ , then  $n = -36$ .

20. If  $-3r + \frac{1}{2} = 4$ , then  $r = -\frac{7}{6}$ .

**SCIENCE** Acceleration  $a$  in feet per second squared, distance traveled  $d$  in feet, velocity  $v$  in feet per second, and time  $t$  in seconds are related in the formula  $d = vt + \frac{1}{2}at^2$ .

a. Prove that if the values for distance, velocity, and time are known, then the acceleration of an object can be calculated using the formula  $a = \frac{2d - 2vt}{t^2}$ .

b. If an object travels 2850 feet in 30 seconds with an initial velocity of 50 feet per second, what is the acceleration of the object? What property justifies your calculation?

